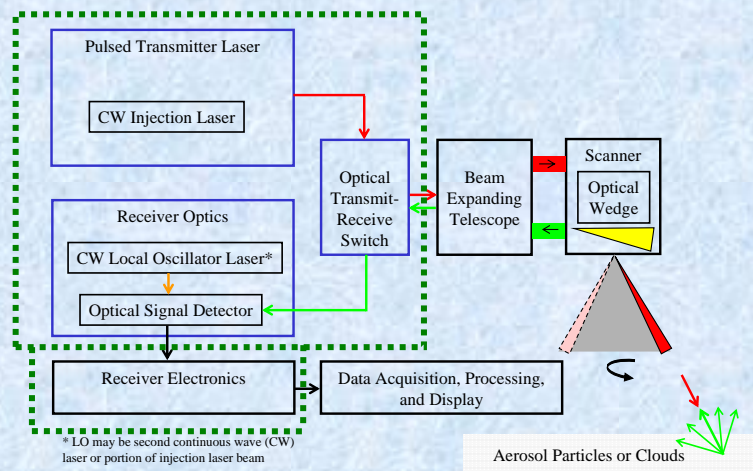




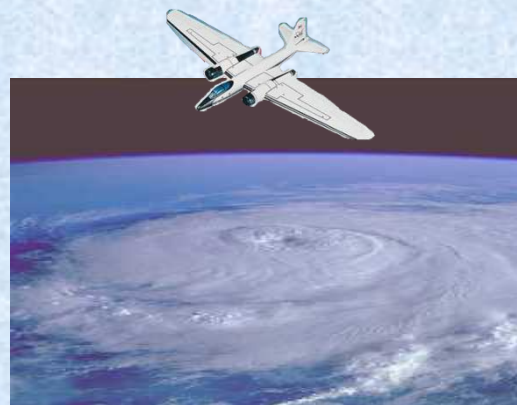
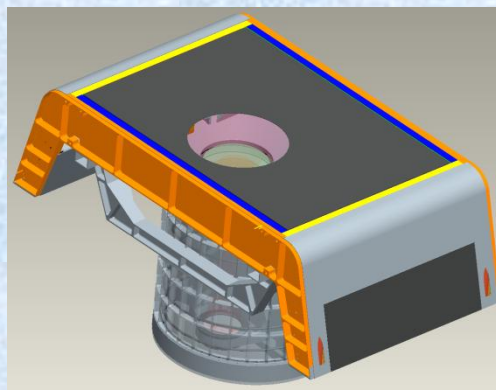
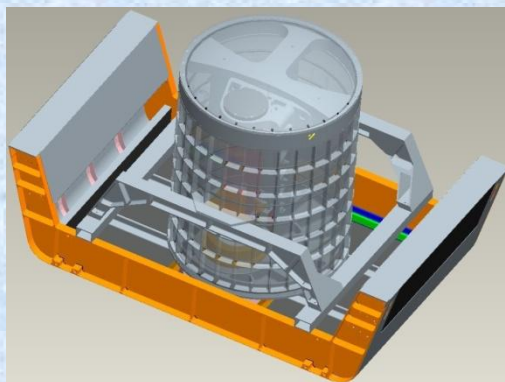
DAWN-AIR2

Doppler Aerosol WiNd lidar – Aircraft Version 2

NASA Langley's DAWN-AIR2 project began in fiscal year 2009 and is scheduled to end after fiscal year 2011. Its goal is to build on the DAWN-AIR1 experience of developing a complete 2-micron pulsed coherent Doppler lidar system for the DC-8 by adding the capability of autonomous operation and adapting the hardware to fly on the NASA WB-57 high altitude aircraft. DAWN-AIR2 will first fly alone to check the system, and will then fly jointly with a direct detection Doppler wind lidar being developed at NASA Goddard. The joint flights will permit demonstration of the concept envisioned for future global wind measurements from earth orbit. The Langley coherent lidar's transceiver uses the 2-micron, Ho:Tm:LuLiF, pulsed laser technology developed at Langley for eventual global wind measurements from earth orbit. Langley has demonstrated a world record 1200 mJ of pulse energy with this technology. However, simulations of the space mission indicate a requirement of 250 mJ pulse energy. Since derating of technology is wise for space missions, the transceiver was designed for 250 mJ. DAWN-AIR2 is leveraging the significant laser and transceiver development that had occurred in NASA's Laser Risk Reduction Program (LRRP) and NASA Langley's DAWN and DAWN-AIR1 projects. DAWN-AIR2 is funded by NASA's Science Mission Directorate (SMD) Earth Science Technology Office (ESTO) through the Research Opportunities in Space and Earth Sciences (ROSES) Instrument Incubator Program (IIP).



Schematic of 2-micron, pulsed, coherent-detection, Doppler wind profiling lidar system



2-Micron CDL as installed in WB-57's 3-ft unpressurized pallet